

CLAIMS

What is claimed is:

1. A fuel processor for a fuel cell, comprising:

a thermal start device;

a mixing region; and

a temperature control element located between said thermal start device

and said mixing region, wherein said temperature control element reduces temperature increase in said mixing region during thermal startup.

2. The fuel processor of claim 1 further comprising:

a flame arrestor connected to said mixing region; and

a primary reactor connected to said flame arrestor.

3. The fuel processor of claim 1 wherein said temperature control element has a cylindrical shape with opposite end surfaces and bores formed between said end surfaces.

4. The fuel processor of claim 1 wherein said transient temperature control element has a body defining an inlet and an outlet and a plurality of bores formed through said body from said inlet to said outlet.

5. The fuel processor of claim 4 wherein a reduction in temperature increase in said mixing region that is provided by said temperature control element is related to a

number of said bores forming passages through said body, a length of said temperature control element, and a surface area of said passages.

6. The fuel processor of claim 1 wherein said temperature control element is passive.

7. A method of controlling thermal startup temperatures in a fuel processor of a fuel cell, comprising the steps of:

providing a thermal start device and a mixing region; and
locating a passive temperature control element between said thermal start device and said mixing region, wherein said temperature control element reduces temperature increase in said mixing region during thermal startup.

8. The method of claim 7 further comprising:

connecting a flame arrestor to said mixing region; and
connecting a primary reactor to said flame arrestor.

9. The method of claim 7 wherein said temperature control element has a cylindrical shape with a circular end surface with bores formed therein.

10. The method of claim 7 wherein said temperature control element has a body with an inlet and an outlet and a plurality of bores forming passages from said inlet to said outlet.

11. The fuel processor of claim 10 wherein a reduction in temperature increase in said mixing region is related to a number of said bores formed through said body, a length of said temperature control element, and an area of said passages.

12. A temperature control element for a fuel cell processor, comprising:

a body;

an inlet located at one end of said body;

an outlet located at an opposite end of said body; and

a plurality of bores forming passages from said inlet to said outlet.

13. The temperature control element of claim 12 wherein said temperature control element is located between a thermal start device and a mixing region of said fuel processor.

14. The temperature control element of claim 13 wherein said temperature control element reduces temperature increase in said mixing region during thermal startup.

15. The temperature control element of claim 12 wherein said body has a cylindrical shape and said bores have a circular cross-section.

16. The temperature control element of claim 13 further comprising:

a flame arrestor connected to said mixing region; and

a primary reactor connected to said flame arrestor.

17. The temperature control element of claim 13 wherein a reduction in temperature increase in said mixing region is related to a number of said bores formed in said body, a length of said temperature control element, and an area of said passages.

18. The temperature control element of claim 12 wherein said temperature control element is passive.